



RFD Crab Cavity Open Recommendations (with proposals)

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PDR/FDR 20-21 June 2018

- **CAV-PDR-1**: Develop and document, in the acceptance tests of the fully dressed cavities [at FNAL in VTS], a standard way to qualify the performance of the HOM dampers in the finished cavity.
 - Is it clear what measurements are required?
 - Include in AUP acceptance criteria (draft circulated 2018)
- **CAV-PDR-2**: Hold a technical design review of the entire dressed cavity, including helium vessel and magnetic shielding, once the design of those components are complete, to re-assess whether the design verification scheme can confirm the performance of the AUP deliverables, prior to CD-3.
 - This will be the Final Design Review, organized by AUP at FNAL in June 2020

Director CD-2/3b 18-20 July 2018

- **D-CD2/3b-4:** Finalize requirements associated with magnetic shielding in advance of the RFD final design review. Define the required ambient field level at the RF cavity surface with a justification based on the cavity Q0 specification.
 - Do we have it specified correctly in FRS revision distributed this week?

Director CD-2/3b 18-20 July 2018

- **D-CD2/3b-5:** Perform transportation analysis of the assembled RFD with anticipated transportation loads in advance of the RFD final design review. Pay particular attention to the HOM dampers and field probe antenna. Special shipping configuration may be required if risks are deemed too high.
 - Fear that analysis alone may yield results that are over-conservative, how about this:
 1. Calibrate analysis method with real component (e.g. AUP HHOM damper prototype)
 2. Perform bench test on LARP cavity with mock ancillaries (equivalent mass/inertia and feedthrough strength) with increasing loads to identify onset of permanent deformations in all axes
 3. Perform test shipment of LARP cavity with mock ancillaries installed
 - AUP could do this, could we get certain parts from CERN (sacrificial feed-thrus?)

DOE CD-2/3b Review 11-13 Dec 2018

- **CD2/3b-3:** Perform a dressed cavity test in a cryostat at the earliest opportunity to validate the design.
 - SPS test (insert date here), is it too late?
 - Do we have options for an earlier validation in cryomodule-like conditions? FNAL, ANL,..?
 - Include FPC? Include Tuner? Low/High power? Which ones make sense?

DOE CD-2/3b Review 11-13 Dec 2018

- **CD2/3b-5:** Before CD-3c (before Aug 2020) complete the following:
 - a) Hold a Final Design Review of dressed RFD Crab Cavities.
 - June 2020
 - b) Revisit/Reevaluate thermal analysis of FPC and HOM couplers to ensure that the heat leakage does not exceed the total cryogenic limit.
 - Who should be the lead on this? CERN or AUP?

DOE CD-2/3b Review 11-13 Dec 2018

- **CD2/3b-5:** Before CD-3c (before Aug 2020) complete the following:
 - c) Develop a detailed heat load table for the fully dressed cavity and ancillary.
 - Do we have these numbers from cryomodule design?
 - d) Clearly define the acceptance criteria for the dressed cavities with CERN. This should include any performance validation testing after shipping from FNAL to CERN/TRIUMF.
 - For AUP this is the Acceptance Plan + Acceptance Criteria.
 - AUP can provide skeleton of acceptance plan to CERN
 - We already have draft of acceptance criteria, need to finalize ASAP